DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 18-25, 28, 30, 32, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sliger (US Patent No. 4,426,036) in view of Duprez et al. (US Patent No. 4,562,953)

With regards to claim 18, the patent to Sigler discloses all the limitations of the claimed subject matter including a chamber (i.e. the interior chamber of 14 as shown in Figure 1) component having an inlet and an outlet configured to regulate fluid (See Col. 3, Lines 1-15), and the chamber component having at least one opening formed in an inner wall of the chamber component between the inlet and the outlet (i.e. the interior spaces formed by 25); a flow passage regulator which regulates a flow of the fluid passing through the chamber component in a longitudinal direction of the chamber regulator (22), the flow passage regulator (22) having a valve (15) movable in the longitudinal direction and configured to close a passage cross-section positioned between the inlet and the outlet of the chamber component (14), the valve (15) being fixed to a longitudinally extending control shaft (21); and a closure (16) configured to translate with the control shaft (21), the closure having two flat surface supports which extend parallel to two corresponding flat inner wall surfaces provided on the inner wall of the chamber component (14), so as to define two sliding contact surfaces during the translation of the closure (16) within the chamber component (14), the closure (16) being positioned on the shaft (21) and having a shape configured to regulate the fluid flow passing through the opening in accordance with a regulation of the fluid flow

through the passage cross-section (i.e. 16 with knife edge 17), except positively disclosing wherein during translation, the closure is locked against rotation.

The patent to Duprez et al. discloses a valve 80 attached to a threaded nut 70.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the rod and valve of Sliger with wherein the valve is attached such that the closure is locked against rotation in view of the teaching to Duprez et al., in order to properly attach valve to the rod (Col. 3, Lines 10-20 from Duprez et al.)

With regards to claim 19, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of wherein variations in fluid flow resulting from a displacement of the shaft in a region of the passage cross- section and in a region of the opening develop in the same way (See Figure 4).

FIG. 4

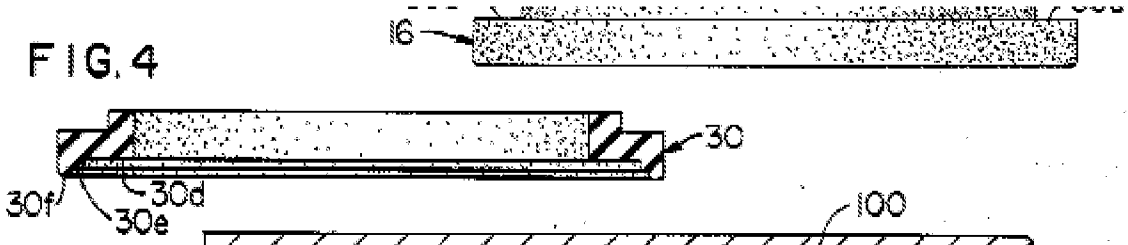
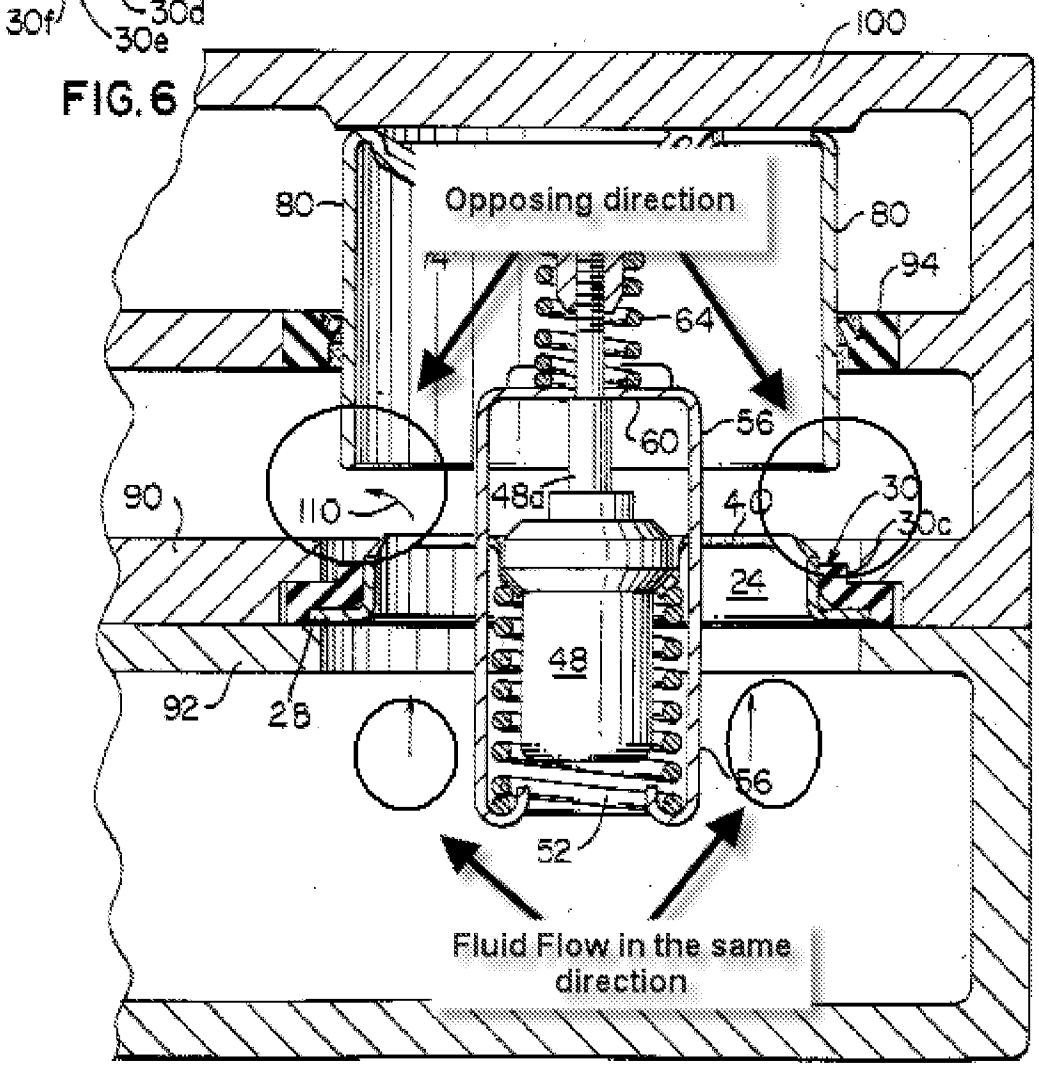


FIG. 6



With regards to claim 20, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of wherein

variations in fluid flow resulting from a displacement of the shaft in a region of the passage cross- section and in a region of the opening develop in opposing manners (See Figure 4).

With regards to claim 21, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Sigler disclosure of wherein the chamber component (i.e. interior of 14) has a generally cylindrical shape and an internal portion defined by longitudinally extending segments (i.e. 14 has an extending segment), and the surface supports of the closure being connected to each other by a brace (i.e. brace 18), wherein a distance between the surface supports is of such a length that the closure is guided in translation into the chamber component (14, See Figure 1).

With regards to claim 22, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of wherein at least one of the surface supports (74) is located in a region of, and surrounds, the opening, and wherein the at least one of the surface supports (74) is configured to gradually close the opening and has a cut-out surface part (See Figure 1).

With regards to claim 23, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of wherein the surface supports (74) have a protruding excess thickness forming a prominent flat

surface configured to limit surface contact between the surface supports of the closure and the inner wall of the chamber component (i.e. arms 74 have a thickness), so as to limit friction between the surface supports and the inner wall of the chamber component and simultaneously guide the closure within the chamber component (i.e. the arms 74 inherently perform this last limitation).

With regards to claim 24, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of wherein the brace (74) comprises a first brace having a tapered blade (74 appears to be a tapered blade in Figure 1), and wherein second and third braces (i.e. three arms 74) connect the surface supports by substantially matching an internal shape of the chamber component, so as to limit disruption of fluid flow through the chamber component (i.e. interior of valve 80).

With regards to claim 25, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of wherein a fourth brace (70), encompassing the hub of the shaft (i.e. rod shown in Figure 1) of the flow passage regulator, is provided to connect the second and third braces to each other, so as to stiffen the structure of the closure (i.e. 80 is tightened to the rod).

With regards to claim 28, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of wherein the flow passage regulator (48) comprises one of a thermoactive and heat-responsive component immersed in the fluid present in the chamber component and activating the translation of the valve (80).

With regards to claim 30, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Sigler disclosure of wherein the closure (16 and 17) is in the form of a frame forming a ring, the section of which is dimensioned relative to the section of the chamber component, and having two wings (i.e. 17 flares out) forming the surface supports.

With regards to claim 32, the combination of Sigler and Duprez et al. discloses all the limitations of the claimed subject matter including Duprez disclosure of one of a pipe and exterior connection fitting in the region of the opening of the passage merging into the chamber component (See Figure 6).

With regards to claim 35, the patent to Sigler discloses wherein the chamber component (14) is stationary.

Allowable Subject Matter

5. Claims 26, 27, 29, 31, 33, and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claim18-35 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's Arguments

Applicant has cancelled claims 1-17, and added claims 18-35.

Examiner's Response to Arguments

Claims 26, 27, 29, 31, 33, and 34 are objected since the prior art does not show a third opening in view of the claimed subject as whole of the specified blade structure for the fourth brace component.

As such, this action is made final.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH COLEMAN whose telephone number is (571)270-3516. The examiner can normally be reached on 5:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Cronin can be reached on (571)272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAC
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Examiner, Art Unit 3747

/Stephen K. Cronin/
Supervisory Patent Examiner, Art Unit 3747